

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 1 JOHN F. KENNEDY FEDERAL BUILDING BOSTON, MASSACHUSETTS 02203-0001

August 4, 1998

Mr. Philip Otis U.S. Department of the Navy Northern Division - NAVFAC 10 Industrial Highway Code 1811/PO - Mail Stop 82 Lester, PA 19113-2090



Re:

Response to Comments for the Remedial Investigation Report and Feasibility Study Site 7 Calf Pasture Point, received July 22, 1998 Former Naval Construction Battalion Center, Davisville, RI

Dear Mr. Otis:

The Environmental Protection Agency, Region I (EPA) has reviewed the above captioned documents, dated July 2 and 13, 1998, pursuant to § 7.6 of the NCBC Federal Facility Agreement (FFA).

The concerns EPA has had previously concerning the modeling have been resolved by the Navy agreeing that the site is so complex that the existing model cannot be used in the realistic prediction of contaminant transport. Instead the Navy has agreed to conduct long term monitoring (LTM).

EPA's concerns about the plume discharge areas in the western, southern and eastern shorelines, any further DNAPL evaluation, and analytes to be sampled for during the LTM will only be resolved during the design of the LTM. Therefore, with the agreement to perform LTM, EPA can approve the RI/FS with the minor wording changes requested in the enclosed comments.

If you have any questions, or would like to set up a meeting, please contact me (617) 573-5736.

Sincerely,

Christine A.P. Williams, RPM

Federal Facilities Superfund Section

Enclosures

cc: Richard Gottlieb, RIDEM w/all Encls
Bill Brandon, EPA w/Encl 1 only
Scott Clifford, EPA w/Encl 1 only
David Peterson, EPA w/Encl 1 only
Forest Lyford, USGS w/Encl 1 only
Tim Prior, USFWS w/Encl 1 only
Walter Davis, NCBC w/all Encls
Marjory Myers, Narragansett Tribe w/Encl 1 only
Marilyn Cohen, ToNK w/Encl 1 only
Howard Cohen, RIEDC w/Encl 1 only
Bryan Wolfenden, RI RC&DC, Inc w/Encl 1 only
Eileen Curry, Dynamac w/Encl 1 only
Jim Shultz, EA w/all Encls

FS RTC dated July 13, 1998



July 13, 1998 FS RTC, p.1. As the source area degrades, numerous degradation products and bi-products can be formed that are sometimes more toxic then the parent products, (i.e., vinyl chloride and arsenic). These degradation products and degradation bi-products must also be monitored in order to demonstrate remedy protectiveness. Please change the references to just CoCs in the RAOs and GRAs to read, "...COCS, COC degradation products and COC degradation bi-products".

July 13, 1998 FS RTC, p.2. Please change the PRG section to indicate that the federal and state criteria will also be used for evaluating the protectiveness of the remedy along with the effectiveness.

NAVY RESPONSES TO RIDEM COMMENTS ON CHANGED PAGES FOR SITE 7 FS AND RTCs DATED JULY 2, 1998

Page 1, COMMENT 1; The original comment addressed the issue of potential for "discharge along the shores of Calf Pasture Point", not just at the Allen harbor entrance channel. Results of forthcoming additional work at the western shore of Calf Pasture Point as well as recent USGS diffusion sampler results may necessitate changes to this response.

FS RTC dated July 2, 1998

July 2, 1998 FS RTC, p.2. Response to Comment 2. The phrase, "completed risk pathway" is not a standard expression and could potentially be misused or misunderstood by those who are not closely associated with the project. Instead of using this expression, it should be stated that a pathway does exist; however, the sampling conducted by the Navy to date does not demonstrate any unacceptable risks. 'Risk' may vary with time, therefore risk will need to be evaluated periodically as part of the LTMP. The text in the RI should clearly state that the risks will continue to be evaluated based on additional studies and during the LTMP. EPA has provided laboratory field notes and laboratory results in a report form previously. EPA has attached additional USGS and EPA oversight contractor field notes as requested. EPA will also be providing additional information concerning the USGS passive vapor sampling results as soon as it is received from the EPA Lexington Laboratory, the copies of the chromatograms which contain the calibration results the results for the method blanks and other QA/QC samples. If the Navy Chemist would like to speak to the Lab for an explanation of the chromatograms, please contact the EPA project manager.

July 2, 1998 FS RTC, Page 2, COMMENT 4, Response is generally sufficient, but the results of additional wells to be installed along the western margin of the site (during the LTMP) may necessitate minor changes in LTM strategy along the western margin of the site.

July 2, 1998 FS RTC, Page 4, COMMENT 5, EPA concurs with the Navy's response. The fact that alternative 2 is the 'preferred alternative' is presumably predicated on the fact that other alternatives such as Alternative 5 were much more expensive and not necessary based on current and expected future risks to human health and the environment. Other things being equal, one might expect a treatment wall (Alt 5) to be preferable since contaminants are actually destroyed, as favored by the EPA. If during the LTM risk is found to be increasing, it may become critical to ascertain the appropriate reaction wall thickness as it is assumed that a major portion of the cost estimate for Alternative 5 derives from the cost of the iron medium. Although EPA does not dispute the list of sites offered by the Navy to justify the 4 foot thickness selection, one could also identify other sites where less iron was specified. It is EPA's impression that more recent research results may indicate that less iron is needed and that fouling may not be as great a problem as originally thought in many environments.

July 2 RTC - Navy Response to Comment 9: Since Institutional Controls, in the form of deed restrictions and monitoring of restriction compliance, is an integral part of the Navy's ensuring the protectiveness of the remedy the specific provisions for creating and maintaining the controls should be detailed in the Record of Decision (ROD). As an example, restrictions were incorporated into the DRMO area ROD at the Navy's New London Sub Base, (see attached).

July 2, 1998 FS RTC, p.6. Responses to Comments 11, 25, & 26 and RI RTC 2 July 1998 Responses to Comment 3. The EPA will not validate the passive diffusion sampling data, however, EPA considers this data to be valid and again requests Navy utilize the data for its intended purpose of indicating general plume discharge locations in the nearshore environment so that upgradient monitoring wells can be sited for use during the LTM.

The Navy's response to EPA Comment 11 is as follows:

"The Navy has not identified a connection between the low concentrations of VOC in SB09-16 and the plume at Site 07, as evidenced by a disconnect of VOC presence and types (e.g., VOC were non-detect in deep samples from SB09-16 suggesting that VOC are not upwelling to the mid-harbor at that location and because PCA/TCE daughter products were not present in the shallow sample from SB09-16 suggesting that the detected concentrations have not traveled from the Site 07 plume which, from the shoreline data, shows daughter products away from the source area)."

Both the USGS passive vapor sampling data as well as the Navy's ground water data from SB09-16 can only be considered as <u>screening data</u>. On this basis, it is inappropriate for the Navy (or EPA) to place undue emphasis on one of these data sets while discounting the other. Rather, it is appropriate to consider both sets of data for what they are - screening data - and to use them in the decision-making process as is appropriate

Based on the very low concentrations of daughter products relative to PCA and TCE concentrations in the shoreline wells, and the fact that only 4 ppb PCA and 2 ppb TCE were

detected in the shallow zone of SB09-16, it is not surprising that daughter products were not detected in SB09-16. This observation does not lend support to the theory that the detected concentrations of PCA and TCE are not from Site 07.

It is difficult to ignore that the two CVOCs detected in SB09-16 were PCA and TCE (the dominant CVOCs at Site 07). This may or may not be coincidental. Furthermore, the Navy states in Comment 15 that the data do not support Site 09 as the source. Due to the hydrogeologic complexity (there may be local influences to the regional groundwater flow patterns) of the nearshore environment, it may not be feasible (or necessary) to determine the source of the trace levels of PCA or TCE in SB09-16. However, this does not preclude the need to better characterize the western shoreline of Site 07.

Please note that the Navy sampled groundwater at MW07-21(S-in silty gravely sand) and MW07-23 (S-in silt) in December 1995 (and May 1996) screened at 10 and 5 feet below MSL respectively and located approximately 100 feet away from the shoreline. EPA/USGS sampled the pore gas in the muck at approximately 1 foot below grade at low tide, high tide and along seeps in April 1998. The exact reason for differences between the Navy's sampling activities and the EPA/USGS sampling activities in the detection of site related VOCs is unknown. It may be because the discharge areas may have changed due to the temporal differences between sampling events, geologic differences in sampling locations, the evolution of the plume, differences in water levels, differences in the salt water/fresh water interface location, and the presumed gradual change from salt to fresh water within the aquifer up gradient of the discharge area. EPA has requested the Navy perform LTM at site 7 as part of the proposed remedy in part to more fully understand the complex nature of this site.

July 2, 1998 FS RTC, pp.6&7. Responses to Comment 14. See Revised RI Chapter 5 General Comments below.

July 2, 1998 FS RTC, Page 8, COMMENT 24; At present, EPA is not aware of a better screening method to identify specific areas of VOC discharge in the dynamic environment of ground water/surface water interaction. Further, the Navy has not thus far offered a better proposal, and in this context, EPA views the passive vapor sampling as an essential precursor to identifying appropriate areas of ground water discharge for follow-up sampling and analysis of ground water, surface water and sediment.

July 2, 1998 FS RTC, p.8. Responses to Comment 25. See General Comment 2 regarding the use of the expression "no completed risk pathway."

July 2, 1998 FS RTC, p.11. Responses to Comment 35 (EPA Comments dated 7-31-97 and Navy responses dated 8-17-97.) See Revised RI Chapter 5 General Comments below.

RIRTC DATED JULY 2, 1998

July 2, 1998 RI RTC, p. 1. Response to Comment 1. The Navy's response states that the Site 07 1997 data has been validated and the data have been incorporated in the site sample results summary tables for the final report. Please clarify whether the results of the data validation will change the text (discussion of data, conclusions, etc.) that was presented in the Pre-Final Changed Pages.

July 2, 1998 RI RTC, p. 1. Response to Comment 2. The Navy states that a well or a well cluster "was planned" to be installed near the shoreline west of MW07-04S/D. It is not clear why the past tense was used. As stated in the original comment, the western shoreline of Calf Pasture Point requires additional characterization. This issue was agreed upon in a previous RTC & LTMP dated May 1997 and in an additional RTC dated 18 July 1997. Why is the Navy apparently changing this agreement? See EPA's comment 20 response below for a discussion of the data available to EPA.

If EPA misunderstood the rationale for the past tense and the Navy does still propose a well cluster be installed west of MW-4, then EPA concurs with the first paragraph of the Navy's response, that is additional wells are needed near the shoreline west of MW07-04S in order to "focus" the various competing hypotheses concerning the nature and extent of CVOC in this general area. In this general context, it is not productive to further discuss the subsequent portions of the Navy's response to the original comment other than to reiterate that the nature and extent of western shoreline of site 07 is simply not constrained by sufficient contaminant or ground water flow data. In this light, much of the Navy's argument is itself unconstrained by data. For instance, the statement that, "SB09-16 is located almost directly cross gradient from site 07 based on the deep zone and rock zone ground-water surface contour maps", fails to recognize the fact that additional data along the western margin of the site may result in changes to the prevailing ground water flow maps. EPA has already pointed out previously that current ground water flow contours give the appearance of bending to the west as one approaches the western limits of the data.

Pages 2 and 3; DANC RELEASE AND MIGRATION, 2nd bullet; DCE is much more likely to be a breakdown product than an impurity.

Page 3; DANC RELEASE AND MIGRATION; 4th bullet; Figure 2-1 suggests another elevation drop (not discussed), which is westward from the source area, in the direction of MW07-25 D/R. A bedrock valley cannot be ruled out in this direction. Additional seismic control is needed between the source areas and the site shoreline before the new well locations planned for the LTMP can be properly sited. Similarly, there are no data which preclude the existence of

westward, rather than south or southwest-oriented fractures.

Page 4; DANC RELEASE AND MIGRATION; 1st para; Regional ground water flow directions are not constrained to the west. Flow maps will need to be revised once new wells are installed to the west of MW07-4D and north and west of MW07-25D/R. It would be beneficial to add the recently identified Sea-Bee well in the northwestern upgradient portion of the site as an additional head control point for bedrock, if feasible.

Page 4; DANC RELEASE AND MIGRATION; 3rd para.; Although it is difficult to say how far to the west beyond MW07-25 D/R the till/bedrock plumes extend, the Navy's general analysis supports the need for additional well control to the west/north of MW07-25D/R.

Page 5; DANC RELEASE AND MIGRATION, 2nd para., There are many possible explanations for these data.

Pages 5 and 6; DANC RELEASE AND MIGRATION; Data from the slated new wells to the north/west of MW07-25D/R and west of MW07-4D may require changes to the statements made here. Little control along the western margin of the site exists currently. Allen Harbor may exert a more profound 'regional' influence on ground water than is acknowledged here. As shown on Figure 3-16A, there is no deep/bedrock ground water head data in the vast area defined by Allen Harbor. As such, there is no reason not to suppose that 'regional' contours may deviate, at least locally, from the generalized flow pattern of "southeast to south". The influence of Allen Harbor, if any, could be expected to exert such localized influence along the western shoreline of site 07, where data is sparse. It is also interesting to note that, at face value, figure 3-16A suggests that SB-16 and SB-17 are not on a flow line form either site 07 or site 09. Therefore, it is perhaps not particularly surprising that contaminant levels are low here. MW07-32D appears to be 'downgradient' of site 07, but geologic conditions change drastically across the entrance channel, rendering conclusions from MW07-32D somewhat unclear.

Page 6; DANC RELEASE AND MIGRATION; 3rd para; This paragraph should be revised to include results of passive vapor sampling activities; VOCs are not the only issue.

July 2, 1998 RI RTC, p. 6. Response to Comment 2. In the last bullet, it is stated that based on the Marine ERA, "there is not a completed risk pathway between the Site VOC plume in groundwater and the offshore sediment". This is not a standard expression ("completed risk pathway") and could potentially be misused or misunderstood by those who are not closely associated with the project. Instead of using this expression, it should be stated that a pathway does exist; however, the sampling conducted by the Navy to date does not demonstrate any unacceptable risks. EPA will also be providing additional information concerning the EPA/USGS passive vapor sampling results and the text in the RI should clearly state that the risks will continue to be evaluated based on additional studies and during the LTMP.

It should be noted that EPA did not validate the December 1997 sediment data. EPA also indicated that the data was screening level data to be used to indicate any issues that may need further investigation in the wetland sediments. It is curious to EPA that the Navy has decided to use this data since it fits with their conceptual model. However, when EPA found hits in areas that the Navy's conceptual model didn't address, the passive diffusion sampler data, the Navy has refused to utilize the data even for screening purposes. Please explain.

July 2, 1998 RI RTC, p. 7. Response to comment 3. See above for a partial response. It is not clear why the Navy has identified the USGS data from sampling points 21, 22, and 23 as "suspect". The presence of TCE in sampling points 21, 22, and 23 seems quite realistic given that MW07-23D, MW07-21S, and MW07-21D all showed levels of TCE and the silt layer disappears somewhere between these two monitoring well cluster areas. Care should be taken when attempting to make comparisons between two sets of data which are not strictly related. The shoreline area is an extremely dynamic area and the contaminant plume is continually migrating. Data collected years ago (the data cited by the Navy of 1,481 ppb total CVOC is from 1995) may not necessarily be representative of the current conditions. The USGS data is less of a snapshot-in-time than a sample collected from a monitoring well (the concentrations in the shoreline monitoring wells may vary significantly with the stage of the tide) since the samplers are allowed to equilibrate with the surrounding environment over a period of time.

The statement the Navy makes that "...where a VOC detection by the passive sampling event was expected, but the reported results are 'ND'", is not correct. The early eluting peaks (EUP) reported for samples 25, 26, & 27 were many, many and present respectively. While the constituents tabulated (Benzene, TCE, Toluene, Tetrachloroethylene, chlorobenzene, ethylbenzene, m/pXylene and o-xylene) were not quantified, other numerous peaks were found and were noted in the report at locations 25, 26, & 27.

EPA believes the data is valid and requests the Navy utilize the data as screening level data to site LTM monitoring wells upgradient above the high tide in the western and southern shores. Additionally, RI finalization should include the passive vapor sampling data.

July 2, 1998 RI RTC, Page 9, COMMENT 9, Please retain for consideration under the LTMP.

July 2, 1998 RI RTC, pp. 10 & 11. Response to comment 15. The method used for sediment collection and analysis during the offshore investigation was not the EPA preferred sample collection and analysis methodology. EPA prefers to use methods described in the NCBC site 7 Sampling and Analysis of Fresh Water Sediments QAPP dated 12-8-97 proposed method 5035, so that trace VOC are not lost. The fact that CVOC were not found in sediments at SB09-06, -07, -10 & 16 may only indicate that the CVOCs were lost due to sampling methodology and the fact that trace levels of PCE and TCE were found at SB09-10 and SB09-16 in groundwater may indicate that higher levels are actually there and are coming from site 9 rather than site 7. Furthermore, SB6, 7 & 10 are generally not upgradient of SB16. SBs 3, 4, 5, & 11 are closer to

being upgradient of SB16. SB3 4, 5 & 11 had trace levels of TCE and PCE found in ground water and at SB3 DCE and TCE were detected in sediments. However, due to the hydrogeologic complexity of the nearshore environment, it may not be feasible (or necessary) to determine the source of the trace levels of PCA or TCE in SB09-16. However, this does not preclude the need to better characterize the western shoreline of Site 07.

July 2, 1998 RI RTC, p. 11. Response to Comment 16. The head measurements for MW-32D/R should be included in Figure 4-26. Response does not directly address the original comment. What is the specific head gradient between MW07-21D and MW07-32D?

July 2, 1998 RI RTC, Page 11, COMMENT 17; EPA strongly disagrees with the Navy's response. EPA maintains that spatial trends in metals data are observable on the basis of current data, but most importantly, additional patterns may emerge over time, and therefore must be examined as part of the LTMP. The Navy's inference that highest metals values in ground water should be co-located with areas of higher CVOC concentrations is not an appropriate justification for dismissing the importance of metals at this site. To the contrary, one might expect to see metals in relatively greater concentrations at some distance downgradient of the source area in keeping with TEAP zonation accompanying biodegradation. An examination of Figure 4-33 is consistent with this concept, and shows relatively high arsenic levels at MW07-19S and MW07-26S (both downgradient), whereas source area arsenic levels are non-detect. Similarly, it is inappropriate to dismiss metals on the basis of background values which were developed for the entire NCBC area (please see comment 23, below). Spatial distribution of metals should be examined/analyzed on a site-specific basis regardless of generalized background values.

July 2, 1998 RI RTC, p. 12. Response to comment 20:

TCE was found at 19 ppb in MW25D soil sample at 34-36 feet in the till, 130 ppb at 10S at 14-16 feet in the silt, 860 in the ground water at 10D (screen at 4.5-13.5feet), 3000 ppb in ground water at 25D (screen at 33-38ft). TCE was also found during the direct push investigation at locations HP 25 & HP 8. TCE was found at 4.5ppb at 20-22 ft and 886 ppb at 37-39 ft at location HP8 and at 172 ppb at 25-27ft, 289, 322 or 1000 ppb at 33.5-35.5 ft at location HP25.

PCE was found at 7 ppb in MW25 soil sample at 34-36 feet in the till, 84 ppb in ground water at 25D (screen at 33-38ft). PCE was also found at location HP25. 7.9 ppb at 25-27 ft and 19, 55 or 23 at 33.5-35.5 ft at HP25.

Both MW locations 10 and 25 and direct push locations 8 & 25 are upgradient, approximately 100-250 feet away from the shoreline, of the hits from the passive diffusion samplers indicating that both TCE and PCE found at passive diffusion sampler locations 2, 13, 14, & 15 are most likely site related western discharge area of the plume.

July 2, 1998 RJ RTC, Page 13, COMMENT 21; The Navy's response does not directly address the original comment, and relies on inference. The nature and extent of contamination to the west and north of MW07-25D/R is simply not known. The relative importance of ground water flow and contaminant transport processes with respect to flow along the bedrock surface, along bedrock fractures, or through areas of residual DNAPL in till are not well understood at this site. The discussion, thus does not meaningfully contribute to the understanding of contaminant distribution to the north and west of MW07-25D/R.

July 2, 1998 RI RTC, p. 13. Response to Comment 23. The Navy's response does not address the basis technical issues identified in the original comment. Further, there is no reason why the development of 'background' values can not be refined on the basis of accrued knowledge just as any other aspect of the environmental programs at NCBC have been. For the purposes of establishing a statistically-based LTMP, site-specific background concentrations should be used. The Navy has proposed to abandon a rock well in the northern part of the Calf Pasture Point. The integrity of this well should be evaluated for use as a background rock well. Other shallow water table wells and deep top of rock wells currently exist in the site 7 area, (MWs 22, 6, 7, & 8). These wells should also be retained for the LTMP site specific background.

July 2, 1998 RI RTC, Page 13, COMMENT 24; Response noted; EPA'S comment was meant to point out that the issue of metals mobilization should also be addressed. CVOC are not the sole focus from EPA's perspective.

July 2, 1998 RI RTC, Page 14, COMMENT 28, EPA invites the Navy to offer a hypothesis concerning these detections. It would seem reasonable that sites 09 and/or 07 are the source of these anomalous values.

July 2, 1998 RI RTC, Page 15, COMMENT 28; Results of the planned well cluster will dictate whether any further investigation is warranted.

July 2, 1998 RI RTC, pp. 16 & 17. Response to Comment 33. While free-flowing DNAPL was not detected in the site 7 wells, the possibility exists and the use of the hydroprobe to sample just above the bedrock surface as opposed to a 10-ft screened interval) in the suspect area could have provided valuable information with respect to the potential for expediting the site clean-up through some percentage of source removal. It is understood that DNAPL would continue to sink through fractures in the bedrock; however, the degree to which the bedrock is fractured in the "bathtub" is not known. The CVOC concentrations exceeding the 1% criterion for the presence of NAPL in this area is believed to warrant further attention, at a minimum, through the monitoring of the source area (as stated previously in EPA comments on the RI/FS and LTMP) to demonstrate source reduction over time. In the future, if risks are demonstrated to be increasing at the discharge area, EPA may require the Navy to further evaluate the feasibility of source removal.

REVISED RI CHAPTER 5 - FATE AND TRANSPORT

General Comments:

Overall, as stated in the report, the fate and transport models applied at the site were not able to reproduce the measured concentrations and consequently showed inconsistency in the estimation of contaminant concentrations. The report attributed these problems to the complex hydrogeological and chemical site conditions and the selection of the relatively simplistic analytical model, AT123D, for the site. In addition, due to the site complexity, the report concluded that continued model refinement and/or development of a site-wide 3D model is not appropriate.

As long as the report clearly states these shortcomings and limits the model usage only in areas such as site characterization, it is agreed that the modeling section can remain in the report. By doing so, the documented model-deficiency could reveal the difficulty and/or inappropriateness of model application at the site, and could serve as additional information in the investigation of remedial alternatives. Needless to say, it does not mean that the pre-final report answered the major modeling concerns or the specifics as raised in previous reviews such as inappropriate model conceptualization, lack of model verification and sensitivity analysis, and others.

In conclusion, since it was agreed that the site is too complex to conduct additional modeling, it is more appropriate and practical to redefine the objective of the modeling instead of dropping all references to completed modeling activities. The suggested new modeling objective could be "for determination of long term monitoring well locations and for identifying additional site characterization needs." In short, the existing model cannot be used in the realistic prediction of contaminant transport.

Page 5-4, paragraph 2, It should be noted that this approach does not consider pore water values per se, and thus does not address potential risks to ecological receptors which are affected by pore water.

Page 5-7, first paragraph; EPA does not concur that metals are of no concern. Please refer to comment/RTC for comment 23, above. The long-term significance of metals in the site 07 system (i.e., ground water, surface water, sediment) must be addressed in the LTMP.

Page 5-12; para. 1; Risk determinations should be reevaluated over time as part of the LTMP, particularly once better identification of areas of ground water discharge to surface water/sediment are made (e.g., on the basis of passive vapor sampling results).

Page 5-18, last paragraph; EPA does not concur that metals are of no concern. Please refer to comment/RTC for comment 23, above.

Page 5-20, "Site Wide Summary"; Summary should also include discussion concerning the modeling data which show, under some scenarios, that Fe and Mn may also result in sediment concentrations that are above the sediment screening criteria.